Clear Form

Michigan Department of Transportation 5100B (12/05)

CHECKLIST TO DESIGNATE AREAS OF EVALUATION FOR REQUESTS FOR PROPOSAL (RFP)

Exhibit B

PROJECT MANAGER	JOB NUMBER (JN)	CONTROL SECTION (CS)
Greg Krueger	85094	84900

DESCRIPTION IF NO JN/CS

WHITE = REQUIRED Check the appropriate Tier in the box below			GRAY SHADING = OPTIONAL
☐ **TIER I ($25,000-$99,999)**	☐ **TIER II ($100,000-$250,000)**	☑ **TIER III (>$250,000)**	
☐	☐	☑	Understanding of Service
☐	☐	☑	*Innovations*
☐	☐	☐	*Safety Program*
N/A	☐	☑	Organization Chart
☐	☐	☑	Qualifications of Team
☐	☐	☑	Past Performance
Not required as part of official RFP	Not required as part of official RFP	☑	Quality Assurance/Quality Control
☐	☐	☑	Location of Service Personnel **(Required for on-site inspections)**
N/A	N/A	☑	Presentation
N/A	N/A	☑	Technical Proposal (if Presentation is required)
3 pages including cover sheet **(No Resumes)**	7 pages	19 pages	Total maximum pages for RFP **not including key personnel resumes**

BUREAU OF HIGHWAYS
REQUEST FOR PROPOSAL
for
QUALIFICATIONS BASED SELECTION FOR NON-PREQUALIFIED SERVICES

The Michigan Department of Transportation (MDOT) is seeking professional services for the project contained in the attached scope of services.

If your firm is interested in providing services, please indicate your interest by submitting a Proposal. The Proposal must be submitted in accordance with the latest "Vendor Selection Guidelines for Service Contracts", available on the MDOT website.

For efficiency sake, we are asking that the vendor firm provide 15 paper copies (14 bound and 1 unbound) of the Proposal to the MDOT project manager name in the attached scope of services. Proposals will not be returned to the vendor.

These copies must be received by April 13, 2006 @ 12:00 p.m. Fax and electronic copes are not acceptable.

In addition, provide one **stapled** copy to:

Regular Mail:
Secretary, Operations Contract Support
Michigan Department of Transportation
P.O. Box 30050
Lansing, MI 48909

OR

Overnight Mail:
Secretary, Operations Contract Support
Michigan Department of Transportation
425 W. Ottawa
Lansing, MI 48933

This copy is to be received within three working days after the due date and time specified above. Please do not deliver in person.

Any questions relative to the scope of services must be submitted by e-mail to the MDOT project manager. Any questions must be asked at least three working days prior to the due date and time specified above. All questions and their answers will be placed on the MDOT website as soon as possible after receipt of the questions. The names of vendors submitting questions will not be disclosed.

For a cost plus fixed fee contract, the selected vendor must have a cost accounting system to support a cost plus fixed fee contract. This type of system has a job-order cost accounting

system for the recording and accumulation of costs incurred under its contracts. Each project is assigned a job number so that costs may be segregated and accumulated in the vendor's job-order accounting system.

If selected, the vendor should make sure that current financial information, including labor rates, overhead computations, and financial statements, if overhead is not audited, is on file with MDOT's Office of Commission Audits. This information must be on file for the prime vendor and all sub vendors so that the contract will not be delayed.

The selection team will review the information submitted and will select the firm considered most qualified to perform the engineering services based on the proposals. The selected vendor will be contacted to confirm capacity. Upon confirmation, that firm will be asked to prepare a priced proposal. Negotiations will be conducted with the firm selected.

The maximum allowable pages for the proposal are limited to the selected Tier shown on MDOT Form 5100B, which is posted with this RFP. Page limits apply to the entire proposal. The number of pages per section is the decision of the creator of the proposal. Include in proposal only those items that are checked by the MDOT project manager on form 5100B.

MDOT is an equal opportunity employer and MDOT DBE firms are encouraged to apply. The participating DBE firm, as currently certified by MDOT's Office of Equal Opportunity, shall be listed in the Proposal.

The scope of services is attached to this solicitation.

SCOPE OF SERVICES FOR
Vehicle Infrastructure Integration (VII) Data Use Analysis and Processing

PROJECT DESCRIPTION/PROJECT MANAGER DESIGNATION:

C.S. J.N. 84900 - 85094

Project Location: Statewide

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Project Type of Work: Services to evaluate the uses and benefits of VII-related data to determine how the VII program will impact how state and local departments of transportation, specifically MDOT, do business as a result of the significant quantity of additional data on all major (and eventually minor) roads. This information is anticipated to permit MDOT and MDOT's partners to more effectively manage traffic on all facilities in the region, manage assets and road conditions, and respond to safety concerns.

I Primary Prequalification Classification:

None

II Secondary Prequalification Classification:

None

The anticipated start date of the service is 6/1/06.

The anticipated completion date for the service is 5/31/08.

DBE Requirement: N/A

MDOT Project Manager: Greg Krueger
425 W. Ottawa St.
Lansing, MI 48909
kruegerg@michigan.gov
(517) 373-9479
(517) 373-2330

The Consultant shall contact the Project Manager prior to beginning any work on the project.

PRE-PROPOSAL MEETING

A pre-proposal meeting is scheduled from 9:00 a.m. to 11:00 a.m. on March 21 at the Michigan ITS Center in Detroit, Michigan. The address is:
Michigan ITS Center
1050 6th Street
Detroit, MI 48226

Although no RSVP is required, they would be appreciated, by fax, to the project manager. It is requested that no more than 3 people per proposing **team** attend due to potential space restrictions.

QUESTIONS

All questions shall be submitted no later than 3:00 p.m. EST on March 31, 2006. All questions shall be submitted in writing either via fax or email to the project manager. The answers to all questions will be posted to the Operations Contract Support web site, where the RFP was posted.

ORAL PRESENTATIONS

Responders who submit proposals may be required to make oral presentations of their proposals to MDOT. These presentations provide an opportunity for the consultants to clarify the proposals through mutual understanding. MDOT will schedule these presentations, if required.

GENERAL:

The Consultant shall furnish all services and labor necessary to conduct and complete the services described herein. The Consultant shall also furnish all materials, equipment, supplies, and incidentals necessary to perform the Services (other than those designated in writing to be furnished by the Department), and check and/or test the materials, equipment, supplies, and incidentals as necessary in carrying out this work. The Services shall be performed to the satisfaction of the Department consistent with applicable professional standards.

The Services described herein are financed with public funds. The Consultant shall comply with all applicable Federal and Stale laws, rules, and regulations. The Consultant shall perform field operations in accordance with MIOSHA regulations and accepted safety practices. The consultant staff shall conduct themselves with professionalism in carrying out their duties.

The Consultant will notify the Project Manager, in writing, prior to any personnel changes from those specified in the Consultant's original approved proposal. Any personnel substitutions are subject to review and approval of the Project Manager.

At the request of the Department, the Consultant, during the progress of the Services, shall furnish information or data relating to the Services described herein that may be required by the Department to enable it to carry out or to proceed with related phases of the Project not described herein, or which may be necessary to enable the Department to furnish information to the Consultant upon which to proceed with further Services.

Introduction

The Michigan State Department of Transportation (MDOT) seeks to evaluate the uses and benefits of VII-related data. It is anticipated that this effort will compliment the activities of the Vehicle Infrastructure Integration Consortium (VII-C) and related industry activities, although the primary purpose of this effort is to support MDOT. These activities may be in direct concert with the VII-C programs or augmented by the activities of each individual automotive OEM and other Michigan VII test bed partners.

The end result of this program is to determine how the VII program will impact how state and local departments of transportation, specifically MDOT and the Road Commission for Oakland County, do business as a result of the significant quantity of additional data on all major (and eventually minor) roads. This information is anticipated to permit MDOT and MDOT's partners to more effectively manage traffic on all facilities in the region, manage assets and road conditions, and respond to safety concerns. The to accomplish this result, one of the key tasks of this research project is to develop prototype applications and data management software to use preliminary data being acquired through the Michigan VII test bed program.

Background

The Michigan Department of Transportation and our partners have been working diligently to reduce both the number and severity of crashes on our roadways, as well as to reduce the impacts of congestion on personal travel and the movement of goods and services. One area identified as a means of solving both of these issues is the integration of the vehicle and the roadway. As these two components are integrated, it is possible to prevent vehicles from colliding with one another, running red lights or running off the road. Likewise, the collection of data on the location, speed, and other vehicle information, in addition to the ability to process and share that information with drivers, in-vehicle, has the potential to reduce secondary crashes and congestion. Providing drivers with sufficient, accurate information congestion, allows them to intelligently select alternate routes or trip departure times.

In 2002, 1,279 people lost their lives on Michigan roadways, and although that shows a decrease of almost 17% from 1995, it still amounts to 3.5 people per day being killed on Michigan roadways. The VII test bed section had 474 crashes, resulting in 2 fatalities and 6 incapacitating injuries from 2002 through 2004. With respect to traffic congestion, the 2005 Urban Mobility Report prepared by the Texas Transportation Institute, shows that in 2002, the average commuter in Detroit spent 57 hours stuck in traffic congestion. This delay resulted in approximately 120 million hours of delay and 73 million gallons of excess fuel consumed, at an annual cost of over 2 billion dollars due to lost time and increased fuel consumption.

Although the VII program shows promise in reducing all of these factors, it is still in its infancy. Work needs to be done to support this program by both the public and private sectors. The private sector needs to develop applications and components, both for in the vehicle and along the roadway, including the development, testing and evaluation. The public sector needs to support the efforts of the private sector by providing infrastructure on the roadside, coordinating activities, and funding some of the less commercially viable yet operationally critical components, such as the safety applications.

Likewise, the VII program will begin to provide a significant amount of data that MDOT and MDOT's partners (FHWA, RCOC, MPO's, etc.) can use in real-time and near real-time as well as future uses. Examples would include active crash avoidance, detection of slippery surface conditions and enhanced evaluation of crash patterns.

Purpose

The intent of this Request for Proposals (RFP) is to evaluate the data being received by MDOT and MDOT's partners through the VII program for it's use in day-to-day applications within a Department of Transportation. Key sub-tasks are going to be the development of functional requirements, development of algorithms, and development of a prototype data processing, storage and management utility, in addition to user interfaces that demonstrate various uses of VII data and technologies on a department of transportations management and operations of transportation infrastructure. These cases require the integration, storage, processing, utilization and dissemination of real time vehicle data from a variety of sources detailed in the background of this proposal, and others as they may become available. It is the ultimate intent of this project to demonstrate the impact on the safety and efficiency of the transportation system generated as a result of the VII program.

Key Tasks

To evaluate the potential uses of VII data in the day-to-day operations of a DOT, the selected vendor will be required to develop a set of prototype back-room applications. However, prior to developing prototype applications, the selected vendor will be required to develop functional requirements through partnering sessions, and the development and review of algorithms and systems (and sub systems) for the processing of the VII data. The elements below detail the four main areas of interest.

Development of Functional Requirements

The Michigan Department of Transportation is developing a VII Steering Committee that comprises personnel from Michigan state agencies, local agencies, Federal Highway Administration (both from Michigan and other locations), representatives from other State Departments of Transportation and local and national agencies outside of Michigan. The selected vendor will be required to work with this steering committee to develop the overall functional requirements for the VII data-use program. This process shall follow the traditional systems engineering process used by US DOT and others.

Following the development of the functional requirements, the selected vendor shall develop and submit for approval system mock-ups that include the data to be used, algorithms associated with the data, and other key components. This will also include a design of the prototype hardware and software that is proposed to be developed for use in this program.

The proposal should include information regarding the team's experience with the Systems Engineering process, proposed stakeholder team management process, traffic and transportation engineering experience (including operations, safety and asset management) and the development of algorithms and systems that process and manage data from multiple (3000+) sources.

Data Management and Distribution Design

One of the key objectives of the VII program is the ability to manage and distribute data in an efficient and scaleable manner. As the prototype being developed will be used by MDOT and its VII partners beyond the anticipated end of this contract, the prototype must be able to demonstrate scalability, redundancy and upgradeability. The proposal should briefly address experience with this type of design and implementation.

The following are general requirements that will be included

a. Server Hardware – The hardware must demonstrate its scalability and upgradeability to allow for demonstrate a future large scale rollout to include city, county and eventual state wide deployment.

b. Server redundancy between contractor site and MDOT facilities – In the event of a disaster the system shall be able to recover and/or automatically route users and applications to redundant server operations.

c. Workstation user portal with secure login for MDOT and RCOC.

d. Web based user portal with secure login for MDOT and RCOC – Applications shall be evaluated and managed by MDOT and RCOC officials via a secure login assigned by the contractor.

e. All data management needs to be defined in a standards-based format to the extent those standards are available. Where no standard is available, the vendor shall define a "standard" that is open and non-proprietary. The "standard" shall be supplied to MDOT and the VII-C and be posted to the MDOT and VII-C web-sites for use by other partners in the project.

Integration of VIIC and Related Available Data

The early success of the VII program will depend on the integration of multiple data sources, including, but not limited to, VII-type data and traditional ITS data (detectors, etc.). The successful vendor should be required to demonstrate the following:

a. Data normalization between various sources – As various data feeds become available to MDOT the contractor shall convert these data into common formats. This will allow the system to utilize related data to obtain significant vehicle penetration rates thereby increasing the effectiveness of each application.

b. Data display and integration into common application schema – Upon successful data normalization the contractor shall utilize the data in the most effective manner to develop common applications that are independent of the actual data source.

The proposal should document experience in using data from multiple sources, in multiple formats, in terms of data normalization, processing and display.

Prototype Applications Development

Following the design of the system, the successful vendor will be required to develop prototype applications that will process and archive the raw data based on input and feedback from the steering committee identified above.

Based on a preliminary review and internal analysis of the available data and information gathered to date from test vehicles, MDOT feels that the following list of applications can be developed from the available data:

- Traffic Information (Real-Time)
  - Link Travel Times
  - Link Speeds
  - Integrated corridor management decision support information
  - Crash notification
  - Others?
- Historic Traffic Information
  - Time of Day
  - Day of Week
  - Travel Time
  - Average Stops
  - Vehicle operational characteristics at “high crash” locations
  - Identification of locations where there are potential crashes due to data anomalies (anti-lock break activations, traction control activations, etc.)
  - Others?
- Performance Measure Calculations
  - Time of Day
  - Day of Week
  - Travel Time
  - Stops

    - Air quality estimations
    - Others?
- Congestion Mitigation and Air Quality
    - Link and corridor travel times
    - Identify Stops
    - Identify "problem corridors" and "hot spots"
    - Develop air quality and emissions calculations
    - Others?
- Weather Traffic Impacts
    - Track storm progress through probe data
    - Tie probe data regarding weather to other information sources, such as the National Weather Service, Clarus, etc. and demonstrate how probe weather data could interact with those sources to improve the maintenance decision support system (including a potential tie-in to the Southeast Michigan Snow and Ice Management (SEMSIM) system)
    - Identify storm impacts on traffic operations
    - Identify maintenance needs through ABS and traction control activations
- Asset Management
    - Identify rough road segments based on probe data (potholes, etc.)
    - Develop a prototype maintenance decision support system
- Traffic Signal Operations
    - Weather impacts
    - Signal retiming impacts (before and after studies; evaluate the effectiveness of changes; etc.)
        - Main Street
        - Cross Street
        - Directional
    - Others?
- Predictive Traffic Impacts
    - Compare current traffic to historic traffic (unusual congestion alarm)
- Network Health Monitoring
    - Vehicle Transmission Success
    - Network Status

The list of potential applications is provided as information for the potential vendors. The proposal should include a list of the prototype applications that the vendor plans to develop as part of this program, and that list does not need to include all of the items listed above. The proposal should also include information regarding the data processing, management, distribution and user interfaces that will be developed as part of this program.

The successful team should include team members with experience in traffic management, operations and highway asset management to ensure that the program being developed meets the needs of a prototypical DOT.

For the applications listed above, the successful proposer will be expected to develop algorithms that use the available data to calculate or derive the desired values.

The proposal should include any experience the proposing team has with the development of traffic and transportation-related applications.

Project Management

The selected vendor shall provide all necessary project management services, including monthly and quarterly progress reports, developing and maintaining a project schedule, and providing invoices in a timely manner.

Once selected, the selected vendor will be required to prepare a formal schedule, defining all deliverables based on days following NTP. The proposal should include a preliminary schedule.

Project Documentation

This project is considered research by the Michigan Department of Transportation, and as such, the results, conclusions and lessons learned from this project need to be documented and disseminated. The selected vendor will be required to prepare a significant amount of documentation, as well as close coordination with MDOT's review and evaluation team. The selected firm shall provide conclusions and recommendations for each project phase.

All software shall include a "users manual" for future reference.

The final documentation should also include specific recommendations for future research efforts regarding the use of VII data in a DOT environment.

Notes to Vendor

1. This contract shall use the standard MDOT Consultant Services contract, a copy of which is attached. This successful vendor should not expect the terms and conditions associated with this contract to be modified in any way.
2. This project is being performed in close cooperation with the Vehicle Infrastructure Integration Consortium (VII-C). The software developed as part of this project will likely be used by MDOT and the VII-C (and their partners) in the development and as part of the Proof of Concept and Field Operational Tests. The successful vendor, prior to starting work on this project, may be required to successfully negotiate with the VII-C on the terms and conditions of the VII-C Cooperative Development Agreement. A copy of the Cooperative Development Agreement can be found at http://www.viiconsortium.org/VIIAgreements.zip .
3. The data sources for this project will be provided by a variety of sources and processes. Some of the data providers and processors have built proprietary information and systems around their data and data management. Likewise, some of the data provided to the successful vendor will be proprietary or of a nature as to impact the competitive nature of the partner in the VII program. As such, these companies/organizations have required MDOT to enter into Non-Disclosure Agreements (NDA). It is anticipated that the successful vendor will be required to enter into a number of NDA's prior to receiving

data or discussing data formats with MDOT's partners. The successful vendor should be prepared to sign multiple NDA's with the partners on this project (no list is available at the time of this RFP to provide), and at multiple times throughout the project as more partners join the Michigan VII team.

4. The software developed as part of this contract, and all associated code and documentation delivered to MDOT at the end of this project will be provided to the DOT VII community as part of the public domain. The successful vendor shall be required to provide MDOT with either full ownership of or a license for free, unlimited distribution of, the software, code and documentation.
5. Software developed by the vendor prior to this contract or during this contract at the successful vendor's expense, and all commercial-off-the-shelf contract required for this project shall be supplied to MDOT as part of the project. MDOT shall be provided a license to use this software freely, including all updates and upgrades, for three years after the end of the project. This type of software is not subject to the software distribution requirements in number 4, above. The vendor shall provide a listing of all software that falls under this exclusion in the proposal, and shall notify the project manager immediately (within 1-week) of any changes to that list as they occur, prior to the use of the proprietary or COTS software package.
6. The successful vendor is required to supply, install, and maintain all necessary computer hardware, including, but not limited to, servers, workstations, monitors, and racks. The proposal shall include a preliminary listing of all hardware necessary for the successful completion of this project. All hardware shall be turned over to MDOT at the end of the project. All project supplied hardware must include the full manufacturers warrantee (minimum 3 years). Supply of this hardware to MDOT will be negotiated following selection.
7. The Michigan VII laboratory and server room will be located in the MDOT Construction and Technology (C&T) facility in Lansing.
8. The selected vendor shall use the Systems Engineering approach to the planning, design, implementation of the software. Deliverables as part of the systems engineering will, at a minimum, include:
    1. Concept of Operations
    2. Functional Requirements
    3. High Level Design
    4. Detailed Design
    5. Documented Code
    6. System Validation
    7. System Verification
    8. Test Plan and Procedures
    9. Test Results
9. While the focus of the applications being developed are for the "back-end" for use by a DOT in an operations center, the successful vendor is also expected to work with the partner members of the VII-C and provide "processed" information back to the VII-C for distribution to vehicles.
10. The successful vendor shall use standard database software and a format that is compatible with existing database formats used by MDOT, and be prepared to document and justify differences between the two.

11. The proposal shall include the operating system that is to be used. If that operating system is not Microsoft Windows, justification needs to be provided to justify the decision/recommendation.
12. Although this is intended as a prototype development effort, a web interface is desired to permit users to access the system and data remotely.
13. The total budget available for the project is between $2,500,000 and $4,000,000. There are anticipated to be multiple authorized phases to the project. These phases will be scoped and negotiated between MDOT and the selected vendor.
14. The steering committee is likely to include members from Transport Wales and the Ontario Ministry of Transportation.

Schedule

The successful vendor shall submit a schedule and draft workplan as part of the proposal documents. A formal schedule will be required within 15 days of Notice to Proceed (NTP). The project is anticipated to last 24 months. In general, the following time frame is expected following NTP:

- Formal Schedule – 15 Days
- Draft Concept of Operations – 45 Days
- Functional Requirements – 75 Days
- Detailed Design – 90 Days
- 1st Preliminary Suite of Prototype Applications (short list of applications to be determined following selection) – 180 Days
- 2nd Preliminary Suite of Prototype Applications (short list of applications to be determined following selection) – 270 Days
- Full Suite of Prototype Application – 450 Days
- Final Suite of Prototype Applications – 540 Days
- Final Documentation and Reports – 720 Days

CONSULTANT PAYMENT:

All invoices/bills for services must be directed to the Department and follow the 'then current' guidelines. The latest copy of the "Professional Engineering Service Reimbursement Guidelines for Bureau of Highways" is available on MDOT's Bulletin Board System. This document contains instructions and forms that must be followed and used for invoicing/billing; payment may be delayed or decreased if the instructions are not followed.

Payment to the Consultant for Services rendered shall not exceed the "Cost plus Fixed Fee Not to Exceed Maximum Amount" unless an increase is approved in accordance with the contract with the Consultant. All invoices/bills must be submitted within 14 calendar days of the last date of services being performed for that invoice.

Direct expenses will not be paid in excess of that allowed by the Department for it's own employees. Supporting documentation must be submitted, with the invoice/bill, for all billable expenses on the Project. The only hours that will be considered allowable charges for this contract are those that are directly attributable to the activities of this Project. Hours spent in

administrative, clerical, or accounting roles for billing and support, are not considered allowable hours; there will be no reimbursement for these hours.

Reimbursement for overtime hours will be limited to time spent on the same project by the same person in excess of 40 hours in a Sunday through Saturday week (no other combinations).